Lesson 1; How are soil samples different?

Objectives: 2.01 Describe and sort a variety of earth materials based on their properties, color, hardness, shape, and size.

3.05 Observe mixtures including: solids with solids, liquids with liquids, and solids with liquids.

Concepts students will learn: Students will learn the characteristics (color, hardness, shape, and size) of three types of soil, sand, clay, humus or potting soil.

Process skills: Observing, communicating, recording.

Materials: Index sample cards (teacher made) 3 per group, white paper, large enough to cover desks, magnifiers, craft sticks, paper plates, plastic spoon (one per group) three cups of dry soil per group: clay, sand, humus, science notebooks

Teacher Preparation: Collect samples of clay, sand and humus. Spread layer of glue on each index card, sprinkle with the soil sample and make a 3-card collection for each discovery group. Prepare a few days ahead so glue is sure to be dry.

Set up discovery areas for groups of -4 students by covering an area with white paper, magnifying glasses, craft sticks, plastic spoon and three plastic cups of soil (one clay, one sand, one humus). Provide each group with a sample card for each type of soil.

Engage: Ask students if they remember what a pedologist does. Review job definition. Place one of the soil types on each of the work areas and have students examine the soil with magnifiers. Have students list characteristics of each type of soil, paying close attention to size of particles, color, shape, and hardness. Ask: How big are the particles of sand? Of clay? What shape are the particles found in the humus? Are they all the same? Do all the sand particles look the same? Continue to ask these questions verbally while children answer in their notebook or provide student with a list of questions they are to answer and include in their notebook. Demonstrate how to scrape soil into a pile using a craft stick. Collect soil into paper plates and set aside. Continue lesson with all three soil types.

Explain: Discuss their findings and list discoveries on chart paper. List each type of soil with specific findings. Refer to the definitions. Students will record their discoveries in their notebooks. A triple Venn diagram could be used to record this information. Place a class generated diagram on the board for children to transfer to their science notebook.

Elaborate: Add a textural unit where children touch and manipulate each type of soil with their hands, discussing the textural characteristics of each type.

Evaluate: Observation, notebook review, see rubric.